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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

WRIGHT, ANDREW D

ART UNIT	PAPER NUMBER
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3617

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,089

Applicant(s)

DUNCAN, IAN JAMES

Examiner

Andrew Wright

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13, 14 and 18-26 is/are rejected.
- 7) ☒ Claim(s) 12 and 15-17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2002 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☐ Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 3/26/02 fails to comply with 37 CFR 1.98(a)(1), which requires a list of all patents, publications, or other information submitted for consideration by the Office. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

2. Figures 1-4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cover portion (claim 9), the flap means projecting downward from the hull at particular angles (claims 13 and 14), the flap means extending over the full width of the central portion and wing portions (claim 15), the chord of the flap means being variable (claims 16 and 17), and the side wing portions underside inclined relative to the underside of the central portion by an angle of 2° to 10° must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 18 objected to because of the following informalities: there is a typographical error in line 5. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-3, 25, and 26 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claims recite that the center of gravity and center of lift are substantially vertically aligned at lift-off speed and design speed (claim 1), between lift-off and design speeds and above (claim 2), and below lift-off speed (claim 3). Applicant has merely recited these limitations without sufficiently describing how such properties are achieved. The center of gravity will remain at a fixed location so long as the weight distribution of the boat is undisturbed. The center of lift will depend on the roll, pitch, yaw, and speed of the hull, and will necessarily shift in

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instances such as sharp turns or abrupt accelerations and decelerations (as recited in claims 25 and 26). Applicant has recited that the center of gravity and center of lift are substantially vertically aligned throughout the entire operating range of the vessel, but has not described how this is achieved in instances such as turns and decelerations.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1, 4, 25, and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

9. Claims 1 and 4 recite ranges for the aspect ratio. In doing so, reference characters (S_2/A) are used. The same reference characters are used for both the design speed aspect ratio and the lift off speed aspect ratio. First, this reference character (S_2/A) is not disclosed in the specification. Second, the same reference character is used for both the design speed aspect ratio and the lift-off speed ratio. As such it is unclear if the same or different aspect ratios are being recited. Lastly, the specification is inconsistent with the treatment of similar characters (A_1 , S_1 , A_2 , and S_2), using the characters interchangeably with regard to the design and lift off conditions on pages 10 and 11 of the specification. As such, it is impossible to determine which conditions are being recited in claims 1 and 2.

10. Claims 25 and 26 recite conditions where the center of lift moves forward or rearward of the center of gravity. Claim 1 recites that the center of gravity and center of

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lift are substantially vertically aligned. It is unclear how the two points can satisfy both recitations at the same time. Furthermore, it is unclear what applicant is referring to as vertical. The centers could be substantially vertically aligned relative to anything, such as the standing waterline, the running waterline, the longitudinal axis of the hull, etc. Clarification is suggested.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1-4 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alexander, Jr. (US 5,685,253) in view of Sinclair, Jr. (US 4,774,902). Alexander teaches that the centers of gravity and lift should be close for balance. Alexander discloses a hull shape that has a wetted surface similar to that claimed (see figures 14-17 of Alexander.) by visual examination of the figures the aspect ratio is close to the recited range of 2.5 to 5.0. Alexander further teaches that the amount of wetted planning surface and the location thereof are best determined empirically on a case by case basis. Using the disclosure of Alexander as a starting point, an aspect ratio of 2.5 to 5.0 for lift off and one of 1.5 to 2.5 for running would be within the range of experimentation of one skilled in the art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the hull of

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Alexander through experimentation to achieve such an aspect ratio to optimize the hydrodynamic performance of the hull for the particular design objective of the hull, as taught by Alexander. As stated, Alexander teaches that the centers of gravity and lift should be close for balance. Sinclair teaches that the centers of gravity and lift should "practically coincide ... to provide an exceptional balance" and eliminate pitching and pounding of the hull. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the hull of Alexander by locating the centers of gravity and lift coincident with each other. It would be obvious to do this at all operating speeds to provide the exceptional balance at all times of operation. The modified invention of Alexander is a watercraft. The center of lift will necessarily move forward to create a restoring force when the bow abruptly pitches down, and will necessarily move rearward to create a restoring force when the bow abruptly pitches up.

13. Claims 5-11, 13, 14, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the modified invention of Alexander as applied to claim 1 above, and further in view of Fisher (US 3,745,963). Alexander does not disclose a generally transverse leading edge of the wetted area of the hull. Fisher discloses a substantially flat bottom planning boat with a cut out at the stern similar to that of Alexander. The flat bottom of Fischer will have a transverse leading edge of the wetted hull portion. It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the hull of Alexander by employing a flat bottom. The motivation would be to further experiment with and optimize the hydrodynamic

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characteristics of the hull. The hull of Alexander has a central portion and side wing portions that extend rearward and laterally of the central portion (figs 17-20). The opening behind the central portion and between the side portions is covered by another section of hull. Alexander does not disclose propellers, but it is well known in the art to locate propellers in this cutout section. Fisher discloses this practice in figure 3.

Therefore it would have been obvious to further modify the hull of Alexander by adding two propellers in the cutout, the motivation being to provide propulsion for the watercraft. Alexander also discloses trim tabs that constitute a trailing edge portion that can be abruptly downswept at variable angles including 45° and 90°. Alexander does not disclose a keel portion. Fisher discloses a keel on the underside of the hull. It would have been obvious to add such a keel and to locate it substantially vertically aligned with the centers to optimize the hydrodynamic performance of the hull.

Retractable keels are well known in the art to provide stability when deployed and reduce drag when retracted. It would have been obvious to make the keel retractable for obtaining lateral stability in some deployed situations and reduced drag in retracted situations. Regarding claims 18-21, Fisher discloses a hull shape with lightly cambered surfaces on both the side wing portions and central portion. It would have been obvious to employ such shaping to optimize the hydrodynamic performance of the hull.

Allowable Subject Matter

14. Claims 12 and 15-17 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112 set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: notwithstanding the 35 USC 112 issues, the prior art does not teach or suggest the trailing edge limitations recited in these claims in combination with the geometric recitations of claims 1 and 7.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Roscher discloses a hull with a generally flat bottom and a generally delta shape in plan view. Lake discloses a hull with a generally delta shape in plan view. Eddy discloses a hull with a flat bottom and delta shape in plan view. Skuce discloses a hull with slightly cambered underside portions. Weiland discloses a hull that is delta shaped in plan view. Granger discloses a hull with slight camber, rearward extending lateral sections, and a keel. Payne discloses a hull with a flat bottom, a delta shape in plan view, and a keel. Aoki discloses a hull with a retractable keel.


17. Any inquiry concerning this communication should be directed to examiner Andrew D. Wright at telephone number (703) 308-6841. The examiner can normally be reached Monday-Friday from 9:00 - 5:00.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, S. Joe Morano, can be reached at (703) 308-0230. The fax number for official communications is 703-872-9326 for before final proceedings and 703-872-9327 for after final proceedings. The fax number for the examiner for unofficial communications is 703-746-3548.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist at (703) 308-1113.

Andrew D. Wright
Patent Examiner
Art Unit 3617



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